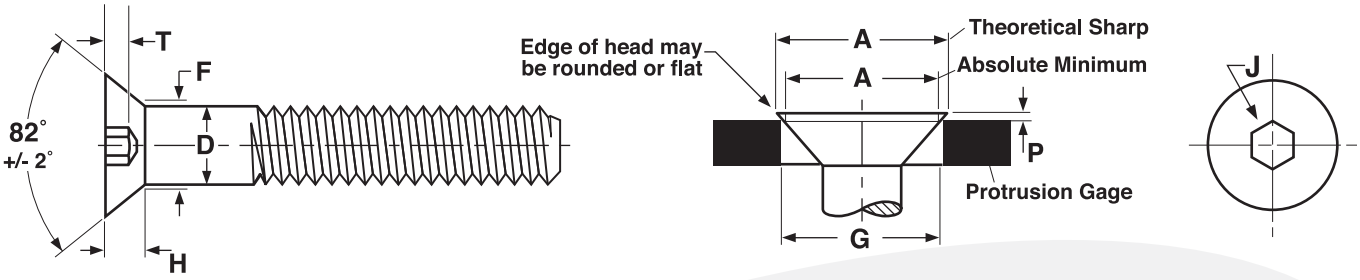
Flat Head Socket Cap Screws

Alloy Steel



Socket Flat Head Cap Screws - Alloy Steel

ASME B18.3-2003, Blue Devil®

Nominal Size	D		A		H	G		P		J	T	F	Tensile Strength, Lbs. Min		Single Shear Strength of Body	Recommended Seating Torques, in./lbs.	
	Body Diameter		Head Diameter		Head Height	Protrusion Gage Diameter		Protrusion		Hex Socket Size	Key Engagement	Fillet Transition Diam.					
	Max	Min	Theoretical Sharp Max	Abs. Min	Ref	Max	Min	Max	Min	Nom	Min	Max	UNRC	UNRF	lbs., Min	Coarse Thread	Fine Thread
4	0.1120	0.1075	0.255	0.218	0.083	0.172	0.171	0.049	0.036	1/16	0.055	0.136	900	-	940	8.	-
5	0.1250	0.1202	0.281	0.240	0.090	0.196	0.195	0.051	0.037	5/64	0.061	0.153	1,185	-	1,180	12.	-
6	0.1380	0.1329	0.307	0.263	0.097	0.220	0.219	0.052	0.037	5/64	0.066	0.168	1,350	-	1,440	15.	-
8	0.1640	0.1585	0.359	0.311	0.112	0.267	0.266	0.055	0.039	3/32	0.076	0.194	2,085	-	2,030	30.	-
10	0.1900	0.1840	0.411	0.359	0.127	0.313	0.312	0.058	0.041	1/8	0.087	0.220	2,610	2,610	2,720	40.	45.
1/4	0.2500	0.2435	0.531	0.480	0.161	0.424	0.423	0.064	0.043	5/32	0.111	0.280	4,750	4,750	4,710	100.	110.
5/16	0.3125	0.3053	0.656	0.600	0.198	0.539	0.538	0.070	0.047	3/16	0.135	0.343	7,800	7,800	7,360	200.	220.
3/8	0.3750	0.3678	0.781	0.720	0.234	0.653	0.652	0.076	0.050	7/32	0.159	0.405	11,600	11,600	10,600	350.	400.
7/16	0.4375	0.4294	0.844	0.781	0.234	0.690	0.689	0.092	0.063	1/4	0.159	0.468	15,900	15,900	14,400	560.	-
1/2	0.5000	0.4919	0.938	0.872	0.251	0.739	0.738	0.119	0.087	5/16	0.172	0.530	21,200	21,200	18,850	850.	1,000.
5/8	0.6250	0.6163	1.188	1.112	0.324	0.962	0.961	0.135	0.096	3/8	0.220	0.655	33,800	33,800	29,450	1,700.	-
3/4	0.7500	0.7406	1.438	1.355	0.396	1.186	1.185	0.150	0.105	1/2	0.220	0.780	50,000	50,000	42,400	3,000	-

Tolerance on Length	Nominal Screw Size	Nominal Screw Length		
		Up to 1 in., Incl.	Over 1 in. to 2-1/2 in., Incl.	Over 2-1/2 in. to 6 in., Incl.
	0 thru 3/8, Inclusive	-0.03	-0.04	-0.06
	7/16 thru 3/4, Inclusive	-0.03	-0.06	-0.08

Description	Similar in design to a socket button head cap screw but with an 82° countersunk flat head.
Applications/ Advantages	Used when a flush mounting, high strength screw is required. Commonly used in tools and dies where moving parts pass over the fastened area.
Material	Screws shall be made from an alloy steel which conforms to the following chemical composition requirements (per product analysis)-- ***Carbon***: 0.28 to 0.50%; ***Phosphorus***: 0.040% maximum; ***Sulfur***: 0.045% maximum. Also, one or more of the following elements shall be present in sufficient quantity to meet the performance requirements listed below: chromium, nickel, molybdenum or vanadium.
Heat Treatment	Screws shall be heat treated by oil quenching from above the transformation temperature and then tempered at a temperature not lower than 650°F.
Hardness	***Thru 1/2" diam.:*** Rockwell C 39 - 44; Over 1/2" diam.: Rockwell C 37 - 44
Tensile Strength	***Thru 1/2" diam.:*** 145,000 psi. minimum; Over 1/2" diam.: 135,000 psi. minimum
Yield Strength	153,000 psi. minimum (over 1/2" diam.)
Elongation	8% minimum (applies to machined specimens over 1/2" diam., of length at least 4D where D equals the nominal diameter of the screw)"
Reduction of Area	35% minimum (applies to machined specimens over 1/2" diam.)
Finish	Screws are supplied with a thermal black finish.

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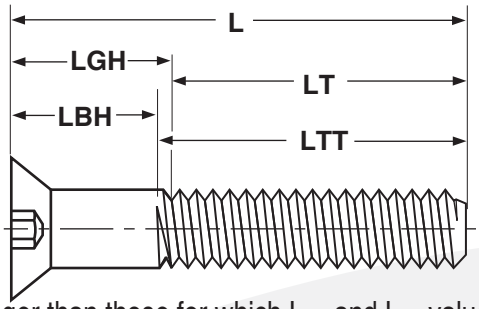

For screws of nominal lengths longer than those for which L_{GH} and L_{BH} values tabulated in this table and for screws over 1 inch in diameter, the mixiumum grip gaging length L_{GH} and the minimum body length L_{BH} of the screws shall be determined as follows:

$$L_{GH} = L - L_T$$
$$L_{BH} = L - L_{TT}$$

where L = nominal length, L_T = minimum thread length, and L_{TT} = maximum total thread length.

Body and Grip Lengths of Flat Head Socket Cap Screws

ASME B18.3-2003

Nominal Size	4		5		6		8		10		1/4	
L_T MIN.	.750		.750		.750		.875		.875		1.000	
L_{TT} MAX	0.99		1.00		1.05		1.19		1.27		1.50	
Nominal Length	L_{GH}	L_{BH}	L_{GH}	L_{BH}	L_{GH}	L_{BH}	L_{GH}	L_{BH}	L_{GH}	L_{BH}	L_{GH}	L_{BH}
1.25	0.50	0.38	0.50	0.38	0.50	0.34	0.38	0.22				
1.50	0.50	0.38	0.50	0.38	0.50	0.34	0.38	0.22	0.62	0.42		
1.75	1.00	0.88	1.00	0.88	1.00	0.84	0.88	0.72	0.62	0.42	0.75	0.50
2.00	1.00	0.88	1.00	0.88	1.00	0.84	0.88	0.72	1.12	0.92	0.75	0.50
2.50					1.50	1.34	1.38	1.22	1.62	1.42	1.25	1.00
3.00							1.88	1.72	2.12	1.92	1.75	1.50
3.50									2.62	2.42	2.25	2.00

Nominal Size	5/16		3/8		7/16		1/2		5/8		3/4	
L_T MIN.	1.125		1.250		1.375		1.500		1.750		2.000	
L_{TT} MAX	1.71		1.94		2.17		2.38		2.82		3.25	
Nominal Length	L_{GH}	L_{BH}	L_{GH}	L_{BH}	L_{GH}	L_{BH}	L_{GH}	L_{BH}	L_{GH}	L_{BH}	L_{GH}	L_{BH}
2.00	0.88	0.60										
2.25	0.88	0.60	1.00	0.69								
2.50	1.38	1.10	1.00	0.69	1.12	0.77	1.00	0.62				
3.00	1.88	1.60	1.50	1.19	1.62	1.27	1.00	0.62				
3.50	2.38	2.10	2.00	1.69	2.12	1.77	1.75	1.36	1.50	1.04	1.50	1.00
4.00	2.88	2.60	2.50	2.19	2.62	2.27	2.50	2.12	2.25	1.80	1.50	1.00
4.50	3.38	3.10	3.00	2.69	3.12	2.77	2.50	2.12	2.25	1.80	2.50	2.00
5.00	3.88	3.60	3.50	3.19	3.62	3.27	3.25	2.86	3.00	2.54	2.50	2.00
5.50	4.38	4.10	4.00	3.69	4.12	3.77	4.00	3.62	3.75	3.30	3.50	3.00
6.00	4.88	4.60	4.50	4.19	4.62	4.27	4.00	3.62	3.75	3.30	3.50	3.00